ERASMUS+

EU programme for education, training, youth and sport

Incoming student mobility

Name of UNIOS University Unit: SCHOOL OF APPLIED MATHEMATICS AND INFORMATICS

COURSES OFFERED IN FOREIGN LANGUAGE
FOR ERASMUS+ INDIVIDUAL INCOMING STUDENTS

Department or Chair within the UNIOS Unit	School of Applied Mathematics and Informatics

Study program	• Undergraduate university study programme in Mathematics and Computer Science • Undergraduate university study programme in Mathematics • Graduate Mathematics and Informatics Education Study Programme

Study level	Undergraduate (Bachelor)

Course title	Real Analysis
Course code	M094
Language of instruction	English
Brief course description	Syllabus. 1. Basic of topology. Euclidean space R^n. Euclidean norm on R^n. Equivalent norms. Euclidean metric on R^n. Topology on R^n. Basic concepts of abstract metric and topological spaces (topological structure, closure of a set, boundary of a set, an accumulation point, a dense set, relative topology). 2. Sequences. Sequences of real numbers. Limit superior and limit inferior. Sequences in R^n. Subsequences. Convergence of sequences. Bolzano-Weierstrass theorem. Sequences in metric and topological spaces. On uniqueness of the limit in topological space. Closed sets in terms of limits of convergent sequences. Cauchy sequences. Complete metric spaces. 3. Compactness. Compactness in R^n. Compactness in metric spaces. The Lebesgue number. The Heine-Borel theorem. 4. Continuous mappings. Cauchy's, Heine's and topological definition of continuity of a vector-valued function of several real variables. Properties of continuous functions. Connected space and a path connected space. The continuous function defined on a compact set and some applications (Weierstrass theorem, equivalence of norms in R^n, etc.). Uniform continuity. Lipschitz functions. Banach fixed-point theorem.

	5. Limit of the function. Cauchy's, Heine's and topological definition of the limit of a function. Properties of limits.
Form of teaching	
Form of assessment	Lectures and exercises are obligatory. Final examination consists of both a written and oral part that can be taken after the completion of all lectures and exercises. During the semester, students can take mid-term exams that replace the written examination.
Number of ECTS	7
Class hours per week	3+2+0
Minimum number of students	
Period of realization	Winter semester
Lecturer	Dragana Jankov Maširević